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ART UNIT	PAPER NUMBER
3747	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/726,651	ROBELET, MARC	
	Examiner	Art Unit	
	Marguerite J. McMahon	3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,17-22 and 26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *18 and 19* is/are allowed.

6)☒ Claim(s) *1,17,20-22 and 26* is/are rejected.

7)☒ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/18/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 17, 20-22, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tausig et al (6,311,759) in view of Kemnitz (5,7778,533). Tausig et al teach that it is known to employ thixoforging to make articles which were previously formed by forging. Tausig et al describe the process of thixoforging an engine part such as a clutch hub, as an example. Tausig et al discuss the advantages that thixoforging has over conventional forging, and cites the following: "The forming stresses are up to four orders of magnitude lower in the semisolid state for thixotropic materials. It follows that more intricately shaped components can be formed in a single step to net or near net shape. In relation to conventional forging in particular, this also means that parts can be manufactured faster with a smaller number of processing steps and using smaller presses. Thixoforming also permits the shaping of otherwise unforgeable alloys." (See column 2, lines 5-13 of Tausig et al). "Another obviously important variable is the applied load necessary for the deforming (shaping) of the semisolid charge, and this may be several orders of magnitude less in thixoforming than is required in conventional forging" (See column 9, lines 12-17 of Tausig et al). Note that Tausig et al consider thixoforging to be a type of thixoforming.

Tausig et al show everything except utilizing the method of manufacture to form a piston, and some of the alloys claimed. Tausig et al show that it is old to employ stainless steel employing most of the elements claimed in claim 18 in similar percentages by weight (see Table 1), as well as an alloy based on Fe-Ni (as claimed in claim 24) or an alloy based on Ni-Col (as claimed in claim 25). See the end of Table 1. Tausig et al also maintain that a large number of metal alloys may be used in the process (see column 5, lines 1-2). Note that it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Kemnitz shows a one-piece steel piston formed by conventional forging. The problems solved by employing the thixoforging method are problems, which are confronted by any article of manufacture, such as a piston, which is made by conventional forging, and include requiring many steps, much force, and being limited as to choice of alloys. Thus, it would have been obvious to one having ordinary skill in the art to adapt the process of thixoforging to make a piston. Pistons formed by forging are conventional, as shown by Kemnitz, and the process of utilizing the process of thixoforging is a relatively new, but known alternative to forging. Thus, there is no inventive step involved in adapting this known process to make a piston, instead of employing the conventional process of forging to make the piston, since it solves some of the problems of conventional forging techniques, such as providing the ability to make the piston in a process that requires fewer steps, with less force, and thus can be made more quickly, and utilizing a larger variety of alloys. In addition, with respect to

claims 17-22, it would have been obvious to one having ordinary skill in the art to utilize the various alloys cited, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Allowable Subject Matter

Claims 18 and 19 are allowed.

Response to Arguments

Applicant's arguments filed 12/18/07 have been fully considered but they are not persuasive.

Applicant argues that Tausig et al considers is necessary to perform a first heating of the metal at or above the liquidus temperature before thixoforming the part, and that this prerequisite is not present with the present invention. Applicant further explains that Tausig requires a second step, after obtaining material by conventional means such as casting in roll bars or billets, i.e. that the slug is remelted to bring it to a liquid state, its temperature then reduced down to a temperature between the liquidus temperature and the liquidus temperature plus 10 degrees Celsius, then cast at this temperature until complete solidification, this second step providing the globular structure. What Applicant is overlooking is that this step is simply describing the step of casting the material, which is included in Applicant's claims. Obviously, in order to cast a material, it is necessary to heat it to a temperature at or above the liquidus temperature. The Tausig et al reference is quite specific as to the range of temperature required in the casting step, in order to obtain an advantageous level of globulization,

whereas Applicant just generally states that the operation of globulization is carried out without carrying out a separate operation of globulization (claim 1) and that globulization occurs during at least one of said casting, cooling and heating (claim 26). See last paragraph of column 2 continuing into column 3, wherein the process is described as follows: "In a first aspect, the present invention provides a process for producing a solid article including the steps of melting metal alloy to produce a molten metal, reducing the temperature of the molten metal to a temperature of from substantially the liquidus temperature to about 5 degrees Celsius above the liquidus temperature, casting said molten metal at said temperature, solidifying the cast metal to produce a solidified metal [corresponding to the piston being formed from a steel part cast in one piece so as to be in a first state, as claimed in claim 1], partially remelting the solidified metal by heating the solidified metal to a temperature between the solidus temperature and the liquidus temperature to produce a thixotropic material and forming the thixotropic material to a desired shape." Thus, Applicant's arguments that Tausig et al provides an extra and unnecessary step are found to be incorrect.

Applicant argues that Tausig et al deals substantially only with light alloys and only mentions steel briefly as an example of a material which could be utilized, and that the fact that the independent claims 1 and 26 cite the use of steel renders them patentable distinct over Tausig et al. Tausig et al state in the first paragraph of column 5 that "A large number of metal alloys may be used in the process of the present invention. Examples include aluminum alloys, magnesium alloys, copper alloys, ferrous alloys [such as steel], and super-alloys. This list is not exhaustive. Preferred alloys for

use in the present invention include those shown in Table 1:" Various types of steels are listed in the table which follows. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Given that the selection of a known material is not a patentably distinct feature in general, and that the Tausig reference contemplates the use of the material in question, this argument is not found to be convincing.

Applicant further argues that claim 26 recites casting and cooling a steel material, heating the steel material so as to bring the steel material to an intermediate temperature between its solidus temperature and its liquidus temperature, wherein at least one of the casting, the cooling and the subsequent heating comprises obtaining a globular primary structure of the steel material, and that this is neither disclosed nor suggested by Tausig. As explained above, this is exactly what Tausig et al does. See last paragraph at bottom of column 2, continuing into column 3.

Applicant further argues that Kemnitz does not show features which it has not been relied upon to show. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

With respect to Applicant's comments regarding Winter et al, which was cited as showing the use of steel in thixoforged items, it is noted that Winter et al is concerned with both thixoforging and rheocasting (see column 4, lines 34-37).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marguerite J. McMahon whose telephone number is 571-272-4848. The examiner can normally be reached on Monday-Wednesday and Friday, 10am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Cronin can be reached on 571-272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marguerite McMahon/
Primary Examiner, Art Unit 3747

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